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Noise Induced Hearing Loss in Workers on Ontario Swine Farms

Kathy Zurbrigg, Veterinary Science, OMAF

According to an American survey, noise-induced hearing loss (NIHL) is the most common occupational disease (Kerr *et al.*, 2003). Several studies have shown that, compared to workers in other occupations, farmers have higher rates of NIHL although none of these studies were specific to swine producers (Broste *et al.*, 1989; Marvel *et al.*, 1991). Kerr *et al.* (2003) surveyed producers at a farm show and gave them a hearing test. Sixty-seven percent of producers had a hearing loss of greater than 25 decibels. Hwang *et al.* (2001) showed that being from a livestock farm was predictive of hearing loss. An Ontario study surveyed dairy farmers for NIHL (Pfeiffer *et al.*, 1984) and found that rates of NIHL increased with years of experience farming. However, in a recent search, no published literature could be found regarding hearing loss specifically in swine producers.

Hearing loss depends on the loudness of the sounds and the length of time a producer works in that environment. Research completed in Poland has shown that livestock farmers typically can be exposed to sound that averages 89.1 decibels (db) for 8 hours every day (Solecki, 2003). The National Institute for Occupational Safety and Health in the U.S. states that the maximum exposure time for 85 db is 8 hours and that noise levels above this decibel range for longer than 8 hours will harm hearing over time. At 110 db, the maximum exposure before damage is likely to occur is 1 minute and 30 seconds. **Table 1** shows the maximum daily exposure times for a range of decibel levels.

Sow vocalizations during feeding in a crated gestation area reached 108 db on one Ontario farm we studied. In this gestation barn, a worker was exposed to 50% of the maximum recommended daily noise allotment during the 30 minutes it took to feed the sows. During an 8-hour day, if the workers had remained in the gestation barn, they would have received 150% of their maximum recommended daily noise. On this farm, all staff wear hearing protection; however, many producers do not. Many also do not know if their ear protection is appropriate to protect them from the decibel levels they are exposed to.

The noise levels in gestation barns can vary drastically. **Figure 2** shows the percentage of the maximum daily noise dose received in two gestation systems throughout the day. Benchmark information on the noise levels that workers are exposed to on swine farms and quantification of the risk this poses to their hearing need to be established. Furthermore, ways of mitigating the adverse impact of loud noises on people and pigs needs to be explored.

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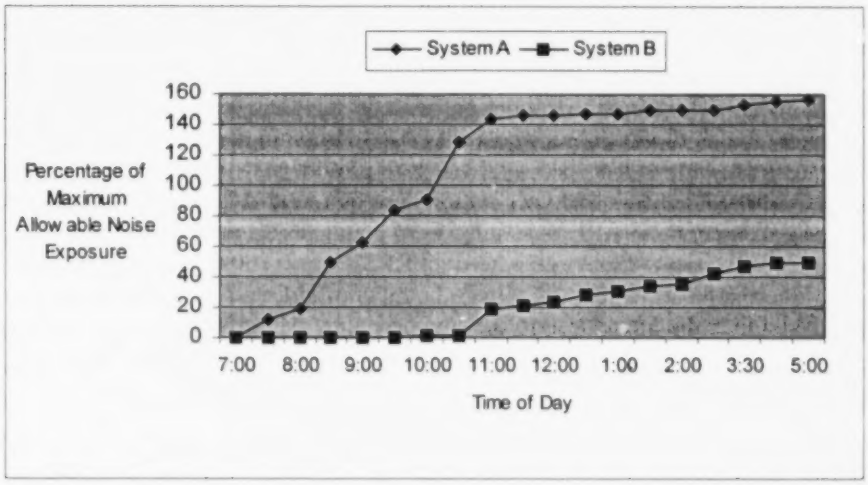
Table 1. Maximum Allowable Exposure Times at Various Decibel Levels Before Noise Induced Hearing Loss Occurs.

Exposure Level (db)	Hours	Minutes	Seconds
85	8	-	-
90	2	31	-
95	-	47	37
100	-	15	-
105	-	4	43
110	-	1	30

Figure 1. Percentage of Daily Maximum Allowable Noise Exposure Throughout the Day in Two Gestation Systems



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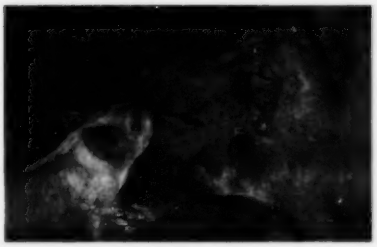
What is a PRRS-Stable Sow Herd?

Cate Dewey, Ontario Veterinary College, University of Guelph, and
Tim Blackwell, Veterinary Science, OMAF



There have been many changes in our understanding of Porcine Reproductive and Respiratory Syndrome (PRRS) over the last decade. One new term that was introduced to our vocabulary during this period was "a PRRS-stable" sow herd. The term has come to mean different things to different people. To some, it means a fully vaccinated sow herd. To others, it is when 100% of the breeding herd is sero-positive. To others, it means a sow herd where no sows are shedding the virus regardless of their serologic status.

Since the goal of any PRRS control program is to produce virus-negative pigs at weaning, this should be the only definition of PRRS-stable. In fact, it may be best in the future to drop this term entirely and focus only on whether pigs are viremic or not at weaning.

Producing virus-negative pigs at weaning can be accomplished either by having a naïve sow herd or by ensuring that 100% of sows are immune to the strain or strains of PRRS that have caused problems in the past. Once virus-negative pigs are produced at weaning the veterinarian has a foundation from which to control the disease.

The decision on whether to create a naïve or an immune sow herd is based primarily on the perceived risk that the herd will be infected with PRRS virus. In many herds, the use of a commercial vaccine for animals at risk is sufficient to provide sterilizing immunity to the PRRS virus. On other farms, it appears that vaccination does not control the endemic virus strain (or strains). When vaccination is ineffective, some herd managers attempt to intentionally infect replacement gilts by exposing them to the herd's PRRS strain(s) 60 to 90 days prior to entry to the sow herd. Their goal is to allow the gilts or boars to produce a sterilizing immunity to the virus, so that when they are introduced to the sow herd they are sero-positive and immune, and no longer shedding virus. Many such programs assume that infected animals shed virus for 30 to 60 days after exposure.

Once the entire breeding herd is immune and virus-free, there is little opportunity for suckling pigs to become infected, unless the virus is brought into the farrowing barn from other sources, such as neighbouring farms, on-farm nurseries or finishing barns. Maintaining isolation may be difficult in smaller herds where farrowing, nursery, and finishing barns are often in close proximity. Partial or total depopulation of the nursery and/or finishing barns is sometimes necessary to eliminate PRRS problems on some farms. Other swine production units find that, if pigs do not encounter PRRS virus until they reach the finishing barn, the disease is mild and causes little measurable production loss.

If a PRRS virus that is homologous to that to which the sows are immune enters the sow herd, few problems are anticipated. If a PRRS virus that is heterologous to the resident strain enters the sow herd, the sows' immunity may not adequately cross-protect against this new strain. In such a situation, disease due to PRRS may reoccur and vaccination or exposure to this new strain must be added to the gilt acclimatization protocol.

To improve our ability to deal with and communicate about PRRS infections on swine farms, perhaps we should stop talking about PRRS stability, but focus instead on whether weaned pigs are virus positive or negative. That after all, is our goal.

Interpreting PRRS Serology

Cate Dewey, Ontario Veterinary College, University of Guelph
and
Tim Blackwell, Veterinary Science, OMAF

Commonly, veterinarians test the sera from a stratified random sample of 30 sows to determine the status of a sow herd for Porcine Reproductive and Respiratory Syndrome (PRRS). All parity groups should be represented. Therefore, approximately 10 bred or recently farrowed gilts, 10 sows in parities 2 & 3 and 10 sows in parities 4+ are sampled. The serum is tested using the IDEXX ELISA. Interpretation can be challenging.

Unfortunately, we do not fully understand the pig's immune response to the PRRS virus. A pig or sow's immunity to the PRRS virus involves more components of the immune system than antibodies, but the antibodies are the easiest portion of the immune response to measure. Antibodies are commonly quantified using the IDEXX ELISA. Pigs develop measurable antibodies 7 to 14 days post infection (PI). However, the antibodies produced in this early humoral immune response are non-neutralizing and co-exist with viremia. Sample to positive (S/P) ratios peak approximately 40 days PI and then decline to low or undetectable levels by 4-6 months PI. Repeatedly vaccinating sows with a homologous virus vaccine does not generally increase the S/P ratios. Middle and older parity sows may have low ratios (< 0.4) even though they were vaccinated every time they weaned a litter. Individual S/P ratios by themselves cannot be used to predict the pig's ability to respond to virus.

Recently, outbreaks of PRRS have occurred in vaccinated sow herds. The reason for these outbreaks is unclear. It has been suggested that these are related to differences among PRRS viral strains. Strain differences may allow a different PRRS virus to infect and cause disease in a sow herd if the herd's pre-existing immunity is not protective against the new strain of virus. This may explain why outbreaks occur in vaccinated herds. An alternative hypothesis is that immunity to vaccination expires over time. Since antibodies measured by the IDEXX ELISA are non-neutralizing, the strain difference hypothesis is more biologically plausible than the assumption that older sows with low S/P ratios are at risk of disease despite repeated vaccinations.

How then should one interpret the S/P ratios from the sample of 30 sows mentioned above, if, for example, the S/P ratios range between 0.22 and 2.04? The interpretation must be based on the serologic status of replacement animals and the vaccination history of the herd. Vaccination alone will not commonly induce an S/P ratio as high as 2.04. If the animals with the lower S/P ratios are older sows, it implies natural degradation of PRRS antibodies. If the extreme ranges of S/P ratios (0.22 and 2.04) are in unbred gilts, this may indicate problems with consistently establishing immunity to PRRS in the gilt pool.

PRRS serology is of the greatest benefit when used to monitor sero-conversion and when the herd's vaccination and gilt acclimatization program is well documented. One time serologic snapshots of breeding herds are difficult to interpret.

Johne's Disease Testing – Using Results and Management to Raise Johne's-free Calves

MacKenzie Littlejohn, St. Mary's Veterinary Clinic

In December of 2003, at a bimonthly herd health visit to a herd of 150 milking Holsteins, I diagnosed a case of Johne's Disease (JD) in a mature cow. The diagnosis was based on clinical signs and a serum ELISA value of 2.037 (strong positive) at the Animal Health Laboratory (AHL). In March of 2004, a second animal was diagnosed as above. What concerned me about this animal was that she was a first calf heifer. With a high level of preventive medicine protocols already in place, it did not take much to convince these herd owners to do further testing. After consulting with the literature and colleagues, a testing program was put in place to prevent the exposure of newborn calves to Johne's positive manure and colostrum.

At dry-off, the owner or herdsman collects a blood sample from each cow in addition to performing their regular dry-off management practices. The samples are refrigerated and picked up by me at the next herd health visit and submitted to the AHL. Laboratory results are faxed to the farm and our clinic. Any cows that are not negative go on a "red flag" list. These non-negative cows are calved on the opposite side of the barn and no colostrum from these cows is used. This Johne's calving pen limits the potential exposure of calves to *M. avium paratuberculosis* to only those calves born to non-negative cows that are currently shedding. All non-negative cows are kept until their production and/or health cause them to be euthanized on the farm.

First and foremost, the advantage of this program is that it was easily added to the management practices already in place, which ensured owner compliance. Secondly, the information obtained is used to make calving location and colostrum feeding delegations, which helps prevent new infections from occurring.

The main disadvantage I see, as a practitioner, in this herd, given its JD history, is that springing heifers are not tested prior to calving. However, when looking at the statistics, this group of animals is still the least likely to contain high shedders.

To date, 98 animals have been tested. There have been 13 non-negative results, comprised of 5 suspicious, 1 weak positive, 2 positive and 5 strong positive (including the 2 clinical cases) results.

Did you know?....

David Alves, Veterinary Science, OMAF

Veterinarians or veterinary clinics can sign up to receive the College of Veterinarians of Ontario (CVO) electronic newsletter via the internet. Your participation in this electronic list will help OMAF to keep you informed of disease alerts and other animal health information.

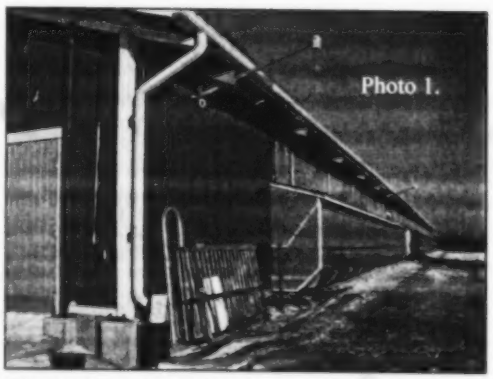
Go to www.cvo.org/newsletter-signup.cfm for more information.

Movement Towards Barriers for Feeding Tables

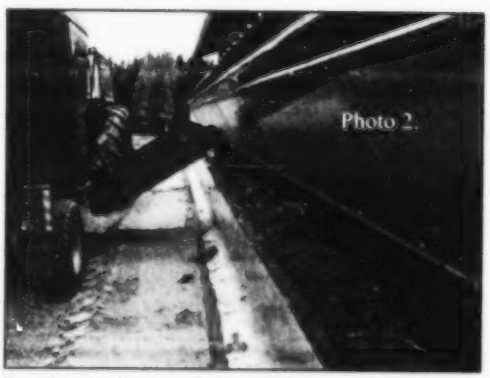
Neil Anderson, Veterinary Science, OMAF

Since labour is the most expensive and the most variable input in the production of milk, producers look for technologies that reduce labour. Drive-through feeding systems and sweep-in mangers are examples. Nonetheless, these systems may create additional input costs, such as time (labour) and equipment to push-up feed, feed wastage and biosecurity risks. The biosecurity risk is associated with traffic crossing dirty (manure) and clean (feed) passages within and outside a barn. There is recent evidence of a growing attraction to an old concept with benefits for the man and the cow. Here's what's happening.

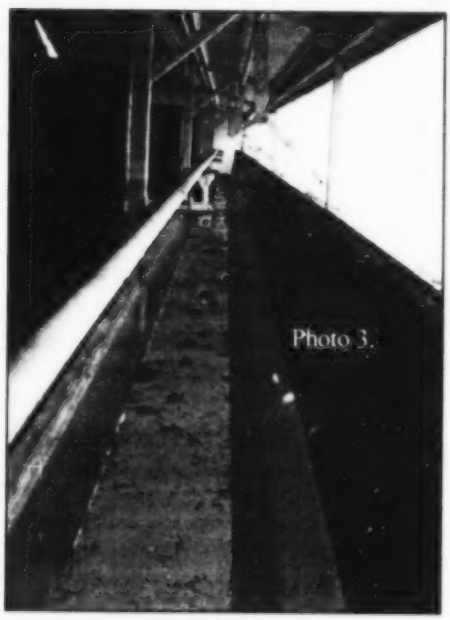
Photos 1, 2 and 3. In Finland, labour is expensive and dairy farmers have great difficulty in hiring workers. To eliminate the labour of pushing-up feed, a few producers built new barns where feeding is done along the outside wall. Jouni Pitkäranta, the architect of the system, designed the 4-row free-stall barn and perimeter feeding system shown in these photos. **Photo 1** shows the feeding wall closed and **Photo 2** shows it open during filling of the feed bunk. Translucent plastic panels provide light and protection from the wind in winter. The wall remains open during the summer months. The upper wall of the barn is an adjustable curtain. **Photo 3** shows the bunk inside the barn.



The feeding wall is closed.



Feeding wall open during filling of the feed bunk.



The bunk from inside the barn.

This is the first Finnish dairy barn with a curtain wall. Jouni got the idea during a study tour of Ontario farms in January 2004. Sun-North Systems in Seaforth, Ontario, provided the installation. During a visit to the farm in February 2005, I found the system to work as advertised. The owner stores excellent silage and claims scant feed refusal or wastage. He removes only pebbles every two to three months. Pneumatic rams operate the wall-opening system.

Photo 4. A new 4-row barn near Spencerville, Ontario, has an elevated drive-through feed alley that provides a feed barrier. The owner used measurements from pre-cast concrete feed bunks for his dimensions. His experience pushing-up feed in his old barn convinced him to build a feed bunk to reduce or eliminate that work. His bunk maintenance is a once-a-week cleaning done by tossing orts into the cow alley. With additional forming, one could build this bunk with a sloping front and a retainer lip on the tractor side to keep dirt from tractor tires out of the feed manger.

A new 4-row barn near Spencerville, Ontario has an elevated drive-through feed alley that provides a feed barrier.

Photo 5. At a recent meeting in Denmark, a speaker showed a sweep-in manger retrofitted with a wooden feed barrier. The photograph was taken at a dairy farm in Sweden. The wooden barrier slopes away from the cows. Feed pushed forward and upward should fall back down within easy reach. The height of the barrier may indicate the capacity necessary to hold sufficient feed for once-a-day feeding.

A sweep-in manger retrofitted with a wooden feed barrier.

Figure 1. In January 2005, I asked Jouni Pitkäranta if he could automate a feed barrier with a design similar to the spoilers on the wing of a jet aircraft. Within a few days he returned the adjacent diagram. It shows the barrier in the lowered and raised positions.

Anecdotally, producers claim feed barriers reduce labour, feed wastage, injuries to cows reaching for feed, and cross contamination of feed with dirt or manure. Some believe feed stays fresher because it isn't moved much. Future feeding systems may include automated or fixed feed barriers. Producers could benefit from research comparing feeding tables with and without barriers.

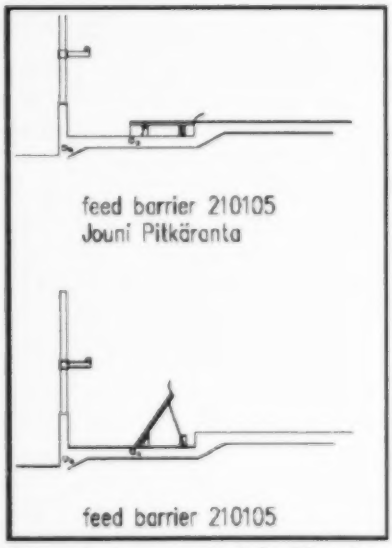


Figure 1. An automated feed barrier with a design similar to the spoilers on the wing of a jet aircraft.

Dry Period Length Could Affect the Efficacy of Vaccination for Mastitis

Ann Godkin, Veterinary Science, OMAF and Karen Hand, CanWest DHI

Variability in the length of the dry period of a dairy cow could affect the efficacy of various health practices, such as vaccination for *E. coli* mastitis. The objective of mastitis vaccination usually is to maximize the cow's protection during early lactation, which typically is the time of highest risk of a new severe case. Vaccines may be given based on the stage of gestation or based on easy management markers, such as the beginning of the dry and close-up periods. The markers chosen may result in a poor vaccination protocol for some cows.

There are two vaccines licensed for prevention of *E. coli* mastitis in Canada. For J-VAC™ the label recommends to "vaccinate at 7 months of gestation or at dry-off, followed by a booster dose 1 to 3 weeks before calving." For Enviracor® J-5, the label advises to "vaccinate cows and heifers at 7 and 8 months of gestation, followed by the third dose within two weeks postpartum" and that three doses are required.

Wilson *et al.* have suggested that these vaccines are like other bacterins in that they require a primary series (two vaccinations given 3 to 8 weeks apart) to initiate protection. Vaccination programs where these vaccines are given according to label directions based on gestation are likely to be well timed with regards to achieving an effective primary series. However, where vaccination administration is given based on dry-off date and the time of the beginning of the close-up period, some cows with long dry periods may have a long time between vaccinations.

For example, in a herd program where the booster vaccination is to be given 3 weeks before calving, to allow a correct time interval for the primary series, the first vaccination needs to be given 2 and 8 weeks before this time. Assuming the cow calves on her predicted day, the dry period length will need to be between 35 and 77 days to ensure that the first vaccination is given no less than 2 weeks and no more than 8 weeks ahead of the booster.

To assess the impact of dry period length on the timing of *E. coli* vaccination, data from 298 randomly selected DHI herds, were assessed for dry period length. The average number of dry periods per herd included in the data was 25, and ranged from 1 to 101 per herd. Among the 7,597 cows, the dry period length ranged from 1 to 150 days. The distribution of dry period length for the cows is shown in **Figure 1**. Among herds, the average length of the dry periods was a very acceptable 62.1 days, but ranged from 20 to 97 days. The distribution for herds is shown in **Figure 2**.

Using the data set of dry periods the likelihood of the appropriate timing of vaccination for an effective primary series was tested. If the 7,597 cows had been vaccinated at dry-off and then again 3 weeks before calving, 585 (8%) would have had an elapsed interval too short (less than 2 weeks - had dry periods 35 days or less). Another 1,640 (21.6%) would have had an interval too long (longer than 8 weeks, dry periods greater than 75 days) for an optimal anamnestic response. Overall, about 1/3rd of the cows likely would not have been able to mount a full response to two vaccinations given using these benchmarks. The frequency of long dry periods (greater than 76 days) varied among herds (**Figure 3**). Forty-five herds (15%) had 1/3rd or more of the dry periods over 76 days.

Figure 1. Distribution of Dry Period Length for 7,597 Cows

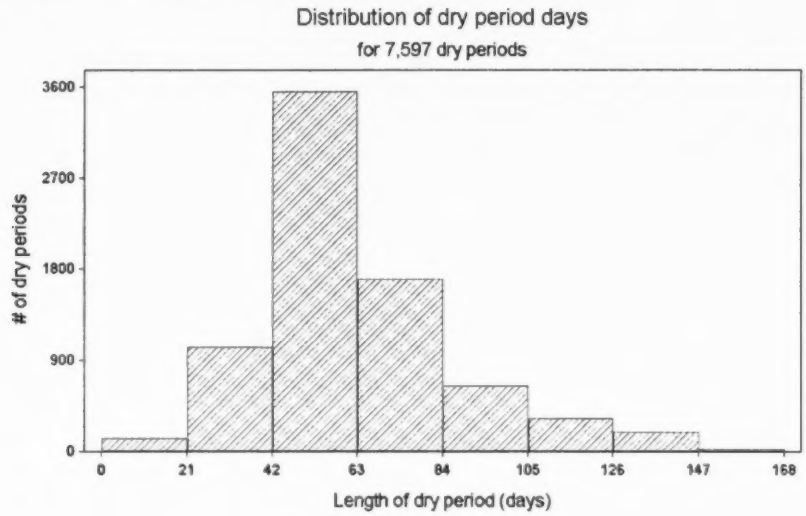
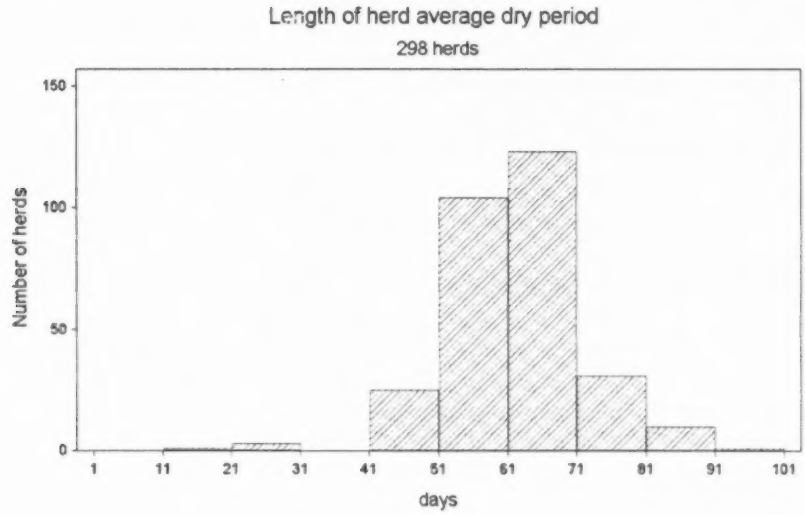


Figure 2. Distribution of Average Dry Period Length for 298 Herds



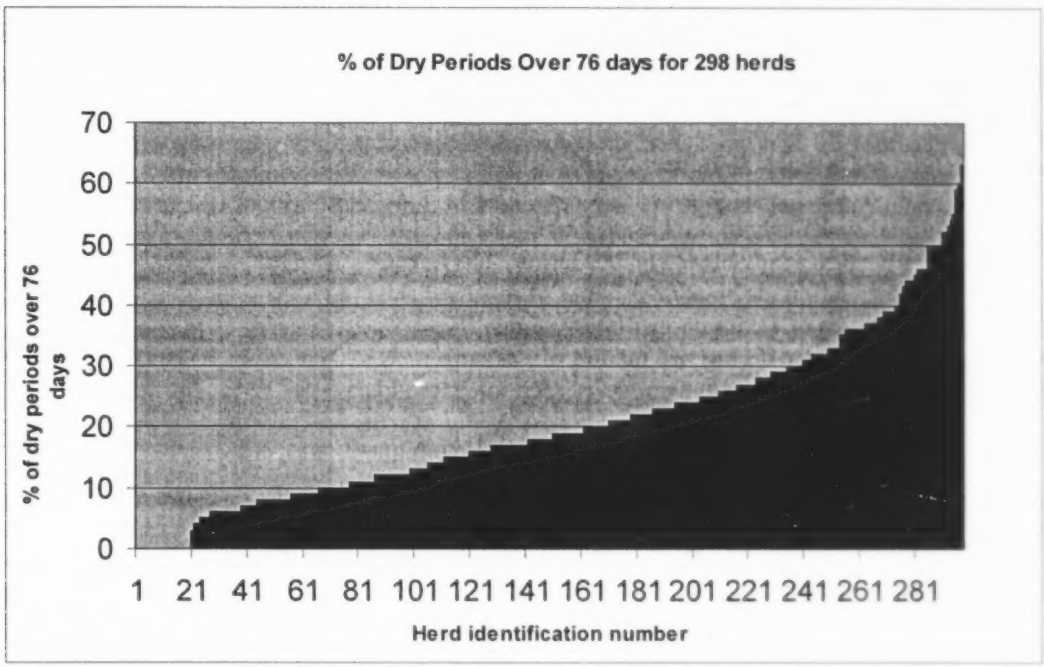
If vaccination is given at dry-off and the booster at the initiation of the close-up period, many herds will not be able to deliver vaccination for *E. coli* mastitis that would result in immunization of the cow. Within herds a significant proportion of cows would remain as susceptible to mastitis as if vaccination had not been done.

Using a protocol based on a time during gestation, such as the 7 and 8-month timing recommended on one of the labels, an appropriate time interval between first and second vaccinations would be observed. However, if the dry period were prolonged, then calving would be occurring further away from the time of the primary series and it is possible that protection in the post-partum period would not be optimal.

The examples given are simplified, but provide evidence that there is a need to reexamine the timing of vaccination in cows where immunity for mastitis does not seem to develop. Inappropriate timing of vaccination to allow immunization to occur may be one reason for continued problems with *E. coli* mastitis in fresh cows in some herds in spite of vaccine use.

Vaccination is a useful and effective tool provided it is used correctly.

Figure 3. Percent of Herd Dry Periods over 76 Days for 298 Ontario Dairy Herds



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Source for Botulinum Vaccine for Cattle

Ann Godkin, Veterinary Science, OMAF

A few herds in Ontario that have experienced outbreaks of botulism may have an interest in vaccinating for the disease caused by *Clostridium botulinum* type C or D. As no vaccine is currently licensed for use in cattle in Canada, in the past, veterinarians have obtained permission to import this for special situations. The vaccine imported previously is no longer available.

In the place of the previous source, vaccine manufactured in Australia by Fort Dodge Australia, has recently been imported. This has been assisted by Dr. Lois Valli of Wyeth Animal Health through her contacts with the sister company in Australia. Dr. Valli can provide further information on the vaccine and its importation. She can be contacted in Guelph at (519) 837-2040.

Pasteurizers for Calf Milk on Small Farms

Ann Godkin, Veterinary Science, OMAF

On some farms, milk may pose a risk to calves for causing new Johne's Disease (JD) or *Mycoplasma bovis* infections. When the situation and the economics are weighed, it may be justified to pasteurize milk and colostrum to prevent these. Producers who do this report a great improvement in overall calf health and a reduction in the incidence of calf scours.

Pasteurizing is done in either continuous flow or batch systems. In continuous flow systems, the milk is processed for a short time at very high temperatures. Commercial systems usually hold milk for 15 seconds at a temperature of at least 72°C. While there are continuous flow systems available for farm use, the high cost (usually greater than 15,000 $US) and their size limit their use. Currently, in Ontario, the BetterMilk pasteurizer is available from Boumatic.

Batch pasteurizer systems hold milk for a longer time at a lower temperature. They are adaptable to smaller farms. They need less space for installation, do smaller volumes of milk and run about 2/3's of the cost of a continuous flow system. Two Ontario dealers are now offering two models of a batch pasteurizer for milk or colostrum from DairyTech in Colorado.

With the Dairy Tech system, batches of milk from 8 to 200 liters are heated to 71.6°C for 30 seconds, and larger volumes of milk up to 500 liters are heated to 62.7°C for 30 minutes. In the larger systems, the lower temperature is used to allow for more energy efficient heating of larger batches. Colostrum is successfully pasteurized at 60°C for 45 minutes, while preserving the immunoglobulin content necessary for immunity in the calf. Colostrum can only be pasteurized in batch systems for consistent results.

Stabel (2001) has shown that batch pasteurization at 65.5°C for 30 minutes destroyed JD bacteria. Gao *et al.* (2002) showed that JD bacteria were destroyed after 15 minutes at 63°C. Butler *et al.* (2000) showed that *Mycoplasma bovis* organisms in milk were destroyed by exposure to 65°C for 2 minutes. It seems that the DairyTech system will adequately cope with both of these pathogens.

For more information, refer to the DairyTech web site at www.dairytech.org or contact the two Ontario dealers:

In the Lindsay area, contact Snodden Farm Equipment at (705) 357-3579.
In the Ingersoll area, contact Martin Folkema at (519) 485-4288 or 1-888-269-6287.

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How Often Does an Infected Quarter "Hide" in a Cow Composite Sample with an SCC of less than 200,000 Cells/ml?

Ann Godkin, Veterinary Science, OMAF

The answer is about 10% of the time in one study herd.

Composite SCCs of less than 200,000 cells/ml on individual cow milk samples are commonly interpreted as being from cows at a low risk of udder infection. However, infected quarters generally lose milk production and the low SCC milk from the other uninfected quarters may dilute their SCC contribution at the cow level. It is worthwhile to keep in mind that a low cow SCC does not necessarily mean that all quarters are free of infection.

Cow and quarter milk samples were collected from 68 low SCC cows over 13 weeks in a research herd. The median quarter SCC of the 2,434 samples was 17,000 cells/ml, while the median cow SCC was 31,000 (615 composite cow SCCs). Of the 615 cow composite samples, 556 had SCCs < 200,000 cells/ml. Among these 556, 90 (16%) had at least 1 quarter that scored 3 on the California Mastitis Test (CMT) on the second consecutive testing. Of the 615 composite samples, 498 were 100,000 cells/ml or lower. 62 (12%) of these still had at least 1 quarter with a CMT score of 3 on the second consecutive test.

213 of the quarter samples were cultured for mastitis bacteria. 90 had coagulase-negative staphylococci (CNS), 12 had *Staph. aureus* and 5 *Strep. uberis*.

The results showed that more than 10% of the time, when the cow composite SCC was less than 200,000 cells/ml, at least 1 quarter had a CMT score of 3 or higher. Some of these quarters had major pathogens, although most had CNS, which are considered minor pathogens.

Using cow composite SCCs as a screening test for mastitis investigations is still a good policy, but it is worthwhile to remember that not all cows with quarters suspected of being infected will be detected. If this criterion is being applied to select cows for culture, some with potentially infected quarters will be missed. However, the important mastitis pathogens in a particular herd will likely be determined. Correctly classifying all cows as mastitic or not, or identifying exactly what infection they have may not be possible nor cost-effective. Correctly classifying the underlying disease process when SCCs are high and the infection rate is high, is essential.

- *Berglund I, Pettersson G, Ostensson K, Svennersten-Sjaunja K. Frequency of individual udder quarters with elevated CMT scores in cows' milk samples with low somatic cell counts. Vet Rec 2004;August 14:213*

Why Is it So Hard to See Her in Heat, Doc?

Ann Godkin, Veterinary Science, OMAF

The efficiency of heat detection is a major bottleneck to improved reproductive performance in Ontario's dairy cows. Reproductive efficiency is declining although it is not clearly apparent that fertility is. This means that cows could get pregnant but don't. Not seeing them in heat or not seeing clear signs of when to breed has led to greater reliance on technologies such as synchronization programs. Unfortunately these are not always successful.

Why can't producers see cows in heat?

Behavioural changes associated with the level of a cow's milk production may be one reason. Cows with higher milk production may still come in heat as frequently as before but may have reduced duration of estrus or estrus behaviour. If the window of observation is shortened, the probability that a cow in estrus will be detected is reduced. The question has been, do cows with higher milk production show estrus less or have differing estrous behaviour? So far, the evidence has been conflicting.

In Wisconsin, using the HeatWatch radiotelemetry system, researchers recorded estrus activity in 42 cows in a free-stall barn. Based on milk production in the five days prior to the detected estrus, cows were divided into low or high production groups.

Cows in the high production group averaged 40 kgs. (range 35.5 - 51.5) of milk daily, while those in the low group averaged 28.0 (range 15.5 - 34.7). Those in the high group had an average duration of estrus of 6.9 hrs (range 1.5 - 19.0), while those in the low group were longer, 11.1 hrs (range 1.5 - 25.1). This difference in the duration of estrus behaviour was significant at $p < .01$.

Interestingly, there were some cows with more than one estrus period included in the observations. Among these cows, the duration of estrus was not correlated to cow but was still related to the level of milk production. This suggests that, even in the same cow, the duration of estrus behaviour depended on what level of milk production she was at when the heat occurred.

Other research has shown that high producing cows do come in heat at about the same frequency and timing as lower producing herd mates. However, this project shows that it is easier for producers to see the lower producing cows (those always low producing or those at a lower producing stage of lactation) in heat. The probability of seeing a cow in heat with only a six-hour window versus those with the 11-hour duration is quite different, especially if the estrus behaviour occurs at night.

When poor pregnancy rates occur, it's not always that the cows are not cycling or that the herd managers aren't looking. It may be that high producing cows need to be specifically targeted. Managers may need to look more often, alter when they look or change how they do it to find these cows in heat.

- *Lopez H, Satter LD, Wiltbank MC. A brief report on the relationship between level of milk production and estrous behaviour of lactating dairy cows. Applied Animal Behaviour Science 2004; 88:359-363.*

Continuing Education/Coming Events

March 30 - April 1, 2005	Professional Dairy Heifer Growers Association (PDHGA) Conference. National Dairy Calf and Heifer Conference jointly with Central Plains Dairy Expo, Sioux Falls, South Dakota. See the PDHGA web site, www.pdhga.org; the Central Plains Dairy Expo web site, www.centralplainsdairyexpo.com or call Alvaro Garcia, 2005 conference chair, (605) 688-5488.
April 4, 2005	Alfred Conference on Organic Dairying and Dairy Research, College D'Alfred Alfred, Ontario
April 7, 2005	Perth East Recreation Complex, 40 Temperance, Milverton, Ontario. The Ecological Farmers Association of Ontario (EFAO) is sponsoring two talks by holistic veterinarian, Dr. C. Edgar Sheaffer. Pennsylvania based, Dr. Sheaffer is the author of Homeopathy for the Herd and the foremost authority on livestock homeopathy. The sessions will run from 9 a.m. to 4 p.m. Cost is $65 per person ($35 for a second person from the same farm), including lunch. www.efao.ca Contact Michael Kroll, RR #2, Williamstown, Ont., K0C 2J0, (613) 347-7561 michael.krol@efao.ca or Ann Slater, for Milverton registration, (519) 349-2448, ann.slater@efao.ca
April 6 & 7, 2005	London Swine Conference, London Convention Centre, London, Ontario. Contact Ontario Pork (519) 767-4600 or www.londonswineconference.ca/
April 14, 2005	Ontario Association of Bovine Practitioners and Ontario Agri Business Association Joint Spring Meeting, Holiday Inn, Guelph. www.oabp.ca/OABPSpring2005/OABAOABPSpring2005.htm
April 13 & 14, 2005 May 10 & 11, 2005	Towanda Country Club, Towanda, PA Holiday Inn Express, Chambersburg, PA Animal Health and Dairy Shelter Design Ag Engineering Workshops hosted by Penn State Cooperative Extension. The workshop registration deadline is March 31, 2005. Contact Dan McFarland (717) 840-7560 or dfm6@psu.edu. AgEngWorkshop.cas.psu.edu
May 17 - 19, 2005	Minnesota Dairy Health Conference. www.cvm.umn.edu/outreach/events/dairy/
May 18 & 19, 2005	Pennsylvania Veterinary Medical Association 6th Annual Spring Clinic, Penn Stater Hotel and Conference Center, State College, Pennsylvania. Day 1 focuses on lameness diseases. Day 2 will consist of a foot trimming and foot care wet lab. Contact Christine Britton, cbritton@pavma.org, or www.pavma.org
June 12 - 15, 2005	4th IDF International Mastitis Conference, Maastricht, The Netherlands. www.fil-idf.org/mastitis2005
July 12 - 13, 2005	National Mastitis Council (NMC) Regional Meeting. Sheraton Hotel, Burlington, Vermont. www.nmconline.org
July 13 - 16, 2005	57th CVMA Convention, Victoria, British Columbia. canadianveterinarians.net/professional-convention-highlights.aspx
July 24 - 28, 2005	American Dairy Science Association Annual Meeting, Cincinnati, Ohio. www.adsa.org
Sept. 22 - 24, 2005	AABP Annual Meeting, Salt Lake City, Utah. www.aabp.org
Oct. 23 - 26, 2005	Agriculture's Role in Managing Antimicrobial Resistance - The Road to Prudent Use. Toronto Airport Marriot Hotel, Toronto, Ontario www.gov.on.ca/OMAFRA/english/livestock/vet/pubhealth.html

Agriculture's Role in Managing Antimicrobial Resistance

The Road to Prudent Use

October 23 - 26, 2005
Toronto Airport Marriot Hotel
Toronto, Ontario, Canada

Antimicrobial resistance in agricultural production systems can impact animal welfare, public health, food safety and environmental health. The prudent use of antimicrobials is an important tool for managing antimicrobial resistance risks. Many factors can play a role in antimicrobial use decision-making, including drug availability, availability of alternatives, scientific evidence, policies, animal, human and environmental health impacts, food safety and economics.

This conference will feature national and international experts on various aspects of antimicrobial resistance in agriculture and will:

- Provide a forum to review where we were, where we are and explore where we need to be in tackling antimicrobial resistance in Canada;
- Review progress on surveillance and identify new opportunities;
- Present current research and thinking on antimicrobial resistance;
- Review progress on the environmental aspects of antimicrobial resistance;
- Present regulatory initiatives on antimicrobial resistance;
- Discuss prudent use efforts and initiatives in chicken, turkey, pig, beef, dairy and veal production;
- Formulate where the Canadian road to prudent use will lead over the next 5 years.

This conference is designed for:

- Users of antimicrobials: agricultural producers, veterinarians, animal nutritionists, and members of the animal-health industry and the medical community,
- Policy-makers: representatives of commodity groups, veterinary associations, regulatory agencies, processors, and retailers,
- Others with interest in or impact on antimicrobial resistance and drug use: researchers, academia, agricultural extension staff, consultants and interested members of the public.

Registration information and further details are available on the conference web site: www.gov.on.ca/OMAF/english/livestock/vet/pubhealth.html

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Comments: .....

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